# What's new on the dental scene?
## Browsing through the dental literature[1]

# Neues aus der Zahnheilkunde
## Blick in die Zahnärztliche Literatur[1]

### The therapeutic efficacy of counseling and education for persistent myofascial pain in the masticatory muscles

*Background:* Apart from the different types of odontalgia (cf. [7]), myalgia of the masticatory muscles is the most prevalent orofacial pain. Various non-invasive therapeutic options that differ considerably in their mechanisms of action are available ([3], summary in [6]). An article by *Ambra Michelotti's* renowned working group (University of Naples Federico II), which was recently published in the Journal of the American Dental Association (2012;143:47–53) [4], offers interesting new insight into this topic.

*Aim:* The authors assessed how patient-related counseling and education performs in comparison to the use of a full-arch, flat plane stabilization splint during sleep for the management of patients suffering from persistent masticatory muscle pain [4]. The authors applied sophisticated methodology.

*Methodology:* Study participants were characterized by recurrent or constant myofacial pain. Additional inclusion criteria were the presence of pain for more than 3 months and pain intensity greater than 30 mm on a 100 mm visual analog scale (VAS), which corresponds to at least moderate pain [1]. Exclusion criteria were any other orofacial pain, temporomandibular joint problems, neurologic or psychiatric disorders, history of or current abuse of analgesics, temporomandibular disorder (TMD) therapy performed in the previous 3 months, and use of an oral appliance in the preceding year. Patients were assigned by block randomization to one of the following two therapeutic groups:
- counseling and education only, or
- the Michigan splint without further information.

The patients underwent no additional therapies. The study design is summarized in Table 1.

### Die therapeutische Wirkung von Aufklärung und Instruktion bei persistierenden Kiefermuskelschmerzen

*Hintergrund:* Abgesehen von den verschiedenen Formen der Odontalgien (vgl. [7]) sind die Myalgien der Kiefermuskulatur die am häufigsten vorkommenden Schmerzen im orofazialen Bereich. Für ihre Behandlung stehen verschiedene nichtinvasive Therapiemöglichkeiten zur Verfügung, deren Wirkungsmechanismen sich deutlich voneinander unterscheiden ([3], Zusammenfassung in [6]). Ein vor kurzem im Journal of the American Dental Association veröffentlichter Beitrag der international hoch angesehenen Arbeitsgruppe um *Ambra Michelotti* (Universität Neapel Friedrich II; [4]) bietet neue interessante Einsichten in diese Thematik.

*Ziel:* Die Autoren widmeten sich der klinisch bedeutungsvollen Frage, wie stark eine bloße Aufklärung und Instruktion zu einem Rückgang anhaltender Schmerzen der Kaumuskulatur führen kann. Dazu bedienten sie sich eines ausgefeilten methodischen Vorgehens.

*Methodik:* Einschlusskriterien zur Teilnahme an der Studie waren länger als drei Monate bestehende rekurrierende oder konstant vorhandene Kiefermuskelschmerzen mit einer Schmerzintensität von größer als 30 mm, gemessen auf einer 100 mm langen visuellen Analogskala (VAS). Dies entspricht mindestens einem mittelstarken Schmerz [1]. Ausschlusskriterien waren andere orofaziale Schmerzen, Kiefergelenkprobleme, neurologische oder psychiatrische Erkrankungen, früherer oder derzeitiger Analgetikamissbrauch sowie Myoarthropathie-bezogene Behandlungen in den vergangenen drei Monaten. Ferner durfte kein Studienteilnehmer im Jahr zuvor eine orale Schiene getragen haben. Die Patienten wurden mittels Blockrandomisierung einer von zwei Gruppen zugeteilt:
- nur Aufklärung und Instruktion oder
- Michigan-Schiene ohne weitere Informationen. Zusätzliche Therapien wurden den Patienten nicht verabreicht.

Der Ablauf der Studie ist dargestellt in Tabelle 1.

[1] **Selected and commented by: J.C. Türp, Basel, Switzerland.**

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**Table 1.** Study design (top to bottom: course of time)

**Tabelle 1.** Design der Studie (Zeitverlauf von oben nach unten)

| | |
|---|---|
| A total of 198 consecutive orofacial pain patients referred to the Clinic for Temporomandibular Disorders and Orofacial Pain | |
| Routine stomatognathic examination (evaluation of the oral cavity, teeth, periodontal tissues, etc.), questionnaire to detect the presence of TMD signs and symptoms | |
| *Examiner 1:*<br>- Clinical and functional TMD-related examination according to the RDC/TMD [2]<br>- Assessment of inclusion and exclusion criteria for acceptance into the trial | |
| Forty-four study participants | |
| *Randomization* | |
| **Counseling and education (n = 23)** | **Michigan splint (n = 18)[a] group** |
| *Examiner 2* (for both groups):<br>- Spontaneous muscle pain (VAS)<br>- Pain during bilateral chewing of chewing gum (VAS)<br>- Headache (VAS)<br>- Pain-free maximum jaw opening | |
| *Examiner 3* (for both groups):<br>- Alginat impressions of both dental arches<br>- Interocclusal record (wax wafer) | |
| | *Dental technician:*<br>- Fabrication of the maxillary stabilization splint: according to the instructions reported by Ramfjord and Ash [5], with minimal increase of the vertical dimension. |
| *One week later (Examiner 3):*<br>*General information about:*<br>- The problem and the suspected etiology (masticatory muscle overuse)<br>- The good prognosis<br>- Normal jaw muscle function<br>- The relationship between persistent pain and emotional stress<br>*Instructions:*<br>- To pay close attention to the jaw muscle activity<br>- To avoid the usual oral habits and excessive mandiblar movements<br>- To follow a soft diet<br>- To keep the muscle relaxed by holding the mandible in its postural position and not in occlusion<br>- To assume mandibular rest position by pronouncing the letter "N" several times and holding the tongue behind the maxillary incisors, with the lips in contact<br>- To follow the instructions at home and in daily life by using visual aids: avoid tooth contacts, keep the mandible in a relaxed position<br>- Written instructions about the therapeutic program (i.e., counseling and education)<br>- Continuation with the prescribed therapy during a 3-month period even if the pain has resolved | *One week later (Examiner 3):*<br>*Insertion:*<br>- Adjustment of the appliance: even and simultaneous contacts of the lower teeth with the splint surface.<br>*Instructions:*<br>- Use of the splint only during sleep<br>- Written instructions about the therapeutic program (i.e., occlusal splint instructions)<br>- Continuation with the prescribed therapy during a 3-month period even if the pain has resolved |
| *Three weeks later (Examiner 3):*<br>*Examination* (duration 5 min):<br>- Patient history<br>- Clinical examination<br>- Question about compliance<br>- Reinforcement of motivation | *Three weeks later (Examiner 3):*<br>*Examination* (duration 5 min):<br>- Patient history<br>- Clinical examination<br>- Evaluation for the need of adjustment of the appliance |

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| *Examiner 2* (for both groups):<br>*Examination:*<br>- Spontaneous muscle pain (VAS)<br>- Pain during bilateral chewing of chewing gum (VAS)<br>- Headache (VAS)<br>- Pain-free maximum jaw opening | |
| *Statistical analysis of the data* | |

[a]The original number of participants in the splint group was 21. Three patients dropped out due to the costs associated with the appliance.
*TMD* temporomandibular disorder, *VAS* visual analog scale.

*Results:* During the 3-month observation period, counseling and education resulted in a statistically significant improvement in spontaneous muscle pain. The average pain reduction of around 11 mm on the VAS can be considered clinically relevant. The improvements observed in the three other outcome parameters (pain during bilateral chewing of chewing gum, headache, pain-free maximum jaw opening) did not differ significantly between the groups. These results are additional strong indications that counseling and education are efficacious therapeutic measures in patients with myofascial pain in the masticatory muscles.

*Conclusion:* Masticatory muscle pain is a clinical problem of utmost importance. The findings presented by Ambra Michelotti and her colleagues from Italy (*Giorgio Iodice, Stefano Vollaro*), the Netherlands (*Michel Steenks*), and New Zealand (*Mauro Farella*) reflect the astonishing therapeutic result obtained by using a simple measure, i.e., counseling and education. The exemplary methodology used in this trial is a strong basis for the validity of their observations. Nonetheless, a "placebo" control group or, if ethically acceptable, a patient group without therapy should be included in future studies so as to distinguish better between unspecific therapeutic influences and the condition's natural course, respectively, and specific therapeutic effects.

## References


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*Ergebnisse:* Mittels Aufklärung und Instruktion wurde im Laufe des dreimonatigen Beobachtungszeitraums eine signifikant stärkere Verringerung des spontanen Muskelschmerzes erreicht als durch das nächtliche Tragen einer Schiene. Bei dem erfolgten mittleren Rückgang um rund 11 mm auf der VAS handelt es sich um eine klinisch relevante Besserung.

Hinsichtlich der drei anderen Zielgrößen – Schmerzen nach einminütigem bilateralem Kauen von Kaugummi, Kopfschmerzen, maximale schmerzfreie Kieferöffnung – unterschieden sich die in beiden Gruppen gemessene Schmerzverringerung und die Erhöhung der Kieferbeweglichkeit statistisch nicht signifikant. Auch dieses Ergebnis ist ein starker Hinweis dafür, dass Aufklärung und Instruktion effektive Therapiemaßnahmen für Patienten mit myofaszialen Schmerzen der Kaumuskulatur sind.

*Schlussfolgerungen:* Myogene Kiefermuskelschmerzen stellen ein außerordentlich bedeutsames klinisches Problem dar. Die von Ambra Michelotti und ihren in Italien (*Giorgio Iodice, Stefano Vollaro*), den Niederlanden (*Michel Steenks*) und Neuseeland (*Mauro Farella*) tätigen Kollegen vorgelegten Befunde unterstreichen die erstaunliche Auswirkung einer ohne großen Aufwand durchzuführenden Maßnahme zur Linderung dieser unangenehmen Beschwerden. Dafür, dass es sich um valide Ergebnisse handelt, spricht die vorbildliche Methodik. Dennoch sollten in Folgeuntersuchungen Patientengruppen eingeschlossen werden, die entweder ein Placebo oder, falls ethisch vertretbar, keine Therapie erhalten, um den natürlichen Verlauf der Schmerzen bzw. unspezifische Therapieeinflüsse von spezifischen Behandlungseffekten besser unterscheiden zu können.